

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this correspondence for Application No. 09/845,933 is being electronically transmitted to Technology Center 2145, via EFS-WEB, on August 21, 2006.

/Scott A. Stinebruner/
Scott A. Stinebruner, Reg. No. 38,323

August 21, 2006
Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Bruce Leroy Beukema et al. Art Unit: 2145
Application No.: 09/845,933 Examiner: Jeffrey R. Swearingen
Filed: April 30, 2001
For: PRIMITIVE COMMUNICATION MECHANISM FOR ADJACENT
NODES IN A CLUSTERED COMPUTER SYSTEM

RESPONSE

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This paper is submitted in reply to the Office Action dated April 20, 2006. A request for a one month extension of time is enclosed herewith, and therefore the period for response extends up to and includes August 21, 2006 (since August 20, 2006 is a Sunday). Reconsideration and allowance of all pending claims are respectfully requested.

In the subject Office Action, claims 1-22 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,308,238 to Smith et al. Applicants respectfully traverse this rejection to the extent that it is maintained.

As an initial matter, Applicants wish to thank the Examiner for the consideration granted in the telephonic interview conducted on August 18, 2006. In the interview, Applicants' representative generally explained the invention and the distinctions between the invention and the prior art of record, most notably Smith. The Examiner appeared to appreciate the distinctions from the claimed subject matter and Smith, but indicated that a

follow-up search, along with a review of the claims for compliance with 35 USC §101, would be required before the application could be allowed.

Now turning to the subject Office Action, and specifically to independent claim 1, this claim generally recites a method of communicating between nodes in a clustered computer system. Among other features, the claim recites the concept of communicating a port identifier from a first node to a second node, where the first node includes "a plurality of network ports and a plurality of communication registers," where "each network port is configured to directly couple to an adjacent node in the clustered computer system over a point-to-point interconnect in [a] point-to-point network," and where "each communication register is dedicated to an associated network port among the plurality of network ports and is configured to store data received over such associated network port."

As such, claim 1 is directed at least in part to the concept of providing multiple network ports in a node, each with a dedicated communication register that is configured to receive data that has been transmitted by an adjacent node in a clustered computer system over a point-to-point interconnect to which the associated network port is coupled.

Smith, in contrast, does not disclose or suggest this concept. Smith, instead, is directed to a network adapter card that is usable in a web server to off-load connection management operations from the server. The adapter card manages multiple connections from multiple clients; however, these multiple clients are connected to the adapter card through the same physical network port. Fig. 1 of Smith, in particular, illustrates an adapter card 108 that connects to a plurality of clients 109 (1-n) over a single network connection 104 (referred to at col. 3, lines 58-67 as a "physical network media").

Smith thus does not disclose a plurality of network ports as required by claim 1.

In addition, it should be noted that Smith discloses the network to which the adapter is coupled as being the Internet, with the clients connected to the adapter card over this network. Claim 1, in contrast, recites that each network port is "configured to directly couple to an adjacent node in [a] clustered computer system over a point-to-point

interconnect in [a] point-to-point network." Smith is completely silent with respect to clustered computer systems, or to the use of point-to-point networks to interconnect nodes of a clustered computer system. In addition, the Internet would not be appreciated by one of ordinary skill in the art to be a "point-to-point network" within the context of Applicants' invention, nor would the clients shown in Fig. 1 of Smith ever be considered to be "directly couple[d]" to the adapter, as is required by claim 1.

Smith therefore does not disclose the concept of coupling a network port via a point-to-point interconnect to an adjacent node in a clustered computer system, as is also required by claim 1.

Furthermore, as noted above, claim 1 requires that each network port be associated with a dedicated communication register that is configured to receive data transmitted by an adjacent node via the associated network port. The buffers that the Examiner relies upon for allegedly corresponding to the claimed communication registers, on the other hand, are not associated with different network ports. Fig. 12 of Smith, for example, as well as the associated text at col. 10, line 36 to col. 11, line 12, discuss the use of buffers that are associated with specific client connections. Since all of these connections communicate over the same physical network port, however, the buffers are not dedicated to different network ports. Moreover, these buffers are allocated dynamically based upon the needs of each client connection, such that a particular buffer may be allocated at different times to different client connections. Under such a scenario, these buffers cannot even be said to be "dedicated" to any particular client connection.

Therefore, Smith also does not disclose a plurality of communication registers, each dedicated to a particular network port, as also required by claim 1.

Claim 1 also requires the use of a "port identifier" that "identifies a network port among the plurality of network ports to which the second node is coupled to the first node." As noted above, Smith includes only one structure that is even arguably analogous to a network port, so any identifiers that may be communicated to a client to facilitate

communications would not be "port" identifiers that identified any particular network port among a plurality of network ports.

Smith therefore also fails to disclose the port identifier required by claim 1.

Given that Smith does not disclose each of these claimed features, Applicants submit that claim 1 is novel over Smith, and that the rejection should be withdrawn.

Applicants also submit that claim 1 is non-obvious over Smith as neither Smith, nor any other prior art of record, discloses or suggests the specific combination of features in claim 1, which utilize communication registers dedicated to different network ports to receive data from adjacent nodes in a clustered computer system using port identifiers to identify those network ports to which the adjacent nodes are coupled via point-to-point interconnects.

Applicants therefore respectfully submit that claim 1 is also non-obvious over Smith and the other prior art of record. Reconsideration and allowance of independent claim 1, and of claims 2-9 which depend therefrom, are therefore respectfully requested.

Next, with regard to independent claims 10, 20 and 22, each of these claims recites a plurality of network ports configured to couple a node to other nodes in a clustered computer system over a point-to-point network, along with a plurality of communication registers dedicated to particular network ports. As discussed above in connection with claim 1, Smith does not disclose or suggest the use of multiple network ports, nor the use of dedicated communication registers that are associated with particular network ports. Furthermore, as noted above, Smith does not disclose either a clustered computer system, or the use of a point-to-point network to interconnect the nodes of a clustered computer system together via the claimed network ports. Accordingly, claims 10, 20 and 22 are novel and non-obvious over Smith and the other prior art of record for the same reasons as presented above for claim 1.

Furthermore, claims 10, 20 and 22 additionally recite the concept of a control circuit that is coupled to the communication registers and configured to automatically notify a node in response to the storage of data in any of the plurality of communication

registers. The Examiner apparently relies on col. 14 of Smith for allegedly disclosing this feature; however, this passage merely discloses the detection of an empty buffer in connection with transferring buffered data from a buffer to the server. Specifically, the status of the buffer is checked to determine whether any more data blocks need to be transferred out of the buffer. This detection, however, is based upon comparing data written and data read values (col. 14, lines 22-25), and not by detecting whether data has been stored in a buffer or register. Furthermore, it is important to note that the claims are directed to notifying a node in response to the storage of data in "any" of a plurality of communication registers (i.e., the notification occurs whenever data is written into any single communication register). The routine disclosed in the cited passage is concerned only with transferring data out of a single buffer associated with a client connection, so the routine is not even concerned with the status of any other buffer.

Smith therefore does not disclose a control circuit that is configured to automatically notify a node in response to the storage of data in any of the plurality of communication registers, as required by claims 10, 20 and 22. Applicants therefore respectfully submit that claims 10, 20 and 22 are novel and non-obvious over Smith for this additional reason. Reconsideration and allowance of independent claims 10, 20 and 22, and of claims 11-19 and 21 which depend respectively therefrom, are therefore respectfully requested.

Finally, with respect to the dependent claims, Applicants traverse the Examiner's rejections based upon the dependency of these claims on the aforementioned independent claims. It should be noted, however, that a number of these claims recite additional features that are not disclosed or suggested by the prior art of record. These features will not be addressed separately herein in the interest of prosecutorial economy.

In summary, Applicants respectfully submit that all pending claims are novel and non-obvious over the prior art of record. Reconsideration and allowance of all pending claims are therefore respectfully requested. If the Examiner has any questions regarding the foregoing, or which might otherwise further this case onto allowance, the Examiner

may contact the undersigned at (513) 241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,

August 21, 2006

Date

/Scott S. Stinebruner/

Scott A. Stinebruner

Reg. No. 38,323

WOOD, HERRON & EVANS, L.L.P.

2700 Carew Tower

441 Vine Street

Cincinnati, Ohio 45202

Telephone: (513) 241-2324

Facsimile: (513) 241-6234